

CLAIMS:

1. An offset printing press comprising:  
a plate cylinder, a blanket cylinder and an impression cylinder each mounted in a frame structure for rotation about parallel individual axes of rotation, the plate cylinder and the blanket cylinder having a common outer circumference defining a print repeat size produced by the plate and blanket cylinders;  
plate and blanket cylinder retention mechanisms respectively engaging the plate cylinder and the blanket cylinder, each retention mechanism comprising first and second trunnions rotatable within the frame structure and respectively engageable to a corresponding cylinder end, at least one of said first and second trunnions being axially displaceable by an actuating member between an operative position and a disengaged position, said at least one trunnion being fastenable in mating engagement with said corresponding cylinder end in the operative position and freely disconnected from said corresponding cylinder end in the disengaged position, such that the plate cylinder and the blanket cylinder are removable from the printing press from between the frame structure; and  
wherein at least one of the plate and blanket cylinder retention mechanisms is selectively displaceable relative to the frame structure such that a distance between the axes of rotation is variable, said at least one cylinder retention

mechanism being fastenable in a desired position to maintain the distance at a predetermined value;

whereby the plate and blanket cylinders are removable from the printing press and substitutable with replacement cylinders having a different outer circumference, thereby providing a correspondingly different sized print repeat when the replacement cylinders are installed into the printing press.

2. The printing press as defined in claim 1, wherein each of the plate and blanket cylinders comprises a central mandrel shaft on which an outer sleeve is removably fixed, the outer sleeves being removable from the central mandrel shafts when the cylinders are removed from the printing press such that substitution of the outer sleeves by replacement sleeves is possible.
3. The printing press as defined in claim 1, wherein the plate cylinder is eccentrically mounted, permitting disengagement of the plate cylinder from contacting engagement with the blanket cylinder to temporarily interrupt printing.
4. The printing press as defined in claim 1, wherein the trunnions are rotatable in the frame structure within bearings, the bearings remaining in contacting engagement with the frame structure when the trunnions are disposed in either one of the operative position and the disengaged position.

5. The printing press as defined in claim 1, wherein the cylinder retention mechanism of the blanket cylinder comprises translating bearing blocks selectively displaceable within corresponding slots in the frame structure such that the blanket cylinder is located in the desired position relative to the substantially fixed plate cylinder.
6. The printing press as defined in claim 1, further comprising a lateral adjustment mechanism providing axial displacement of the plate cylinder relative to the blanket cylinder, thereby permitting fine axial relative adjustment of the plate cylinder and the blanket cylinder to precisely control a contact stripe therebetween.
7. The printing press as defined in claim 6, wherein an independent motor is provided for driving the lateral adjustment mechanism.
8. The printing press as defined in claim 1, wherein the trunnions for each of the plate and blanket cylinders are independently operable, such that each of the plate cylinder and blanket cylinder is independently removable when the corresponding trunnions are displaced to the disengaged position.
9. The printing press as defined in claim 1, wherein the actuating member is pneumatically operated.
10. The printing press as defined in claim 1, further comprising a drive system having a drive motor operatively connected to one of the plate cylinder and the blanket cylinder to provide driven rotation

thereto and a gear drive linkage mechanism operably inter-engaging the plate cylinder and the blanket cylinder for mutual rotation thereof, the gear drive linkage mechanism remaining in gear meshed engagement with both the plate cylinder and the blanket cylinder regardless of their variable relative positions.

11. The printing press as defined in claim 10, wherein the drive motor directly drives the plate cylinder.
12. The printing press as defined in claim 11, wherein angular speed of the drive motor is variable, such that the replacement cylinders having the different outer circumference are employable without having to replace gear elements of the drive system.
13. The printing press as defined in claim 1, wherein the plate and blanket cylinder retention mechanisms are independently operable.
14. A cylinder drive system for an offset printing press having a plate cylinder and a blanket cylinder mounted in a frame structure such that a distance between axes of rotation thereof is selectively variable, the cylinder drive system comprising:
  - a drive motor operatively connected to one of the plate cylinder and the blanket cylinder to provide driven rotation thereto;
  - a gear drive linkage mechanism operably inter-engaging the plate cylinder and the blanket cylinder such that the drive motor drives both the plate and blanket cylinders; and

wherein the gear drive linkage mechanism remains in gear meshed engagement with both the plate cylinder and the blanket cylinder regardless of the variable relative positions thereof.

15. The cylinder drive system as defined in claim 14, wherein the drive motor drives the plate cylinder.
16. The cylinder drive system as defined in claim 14, wherein the gear drive linkage mechanism comprises a plate cylinder gear, a blanket cylinder gear, a first linkage arm having a first idler gear rotatably mounted thereto, and a second linkage arm pivotably engaged with the first linkage arm and having a second idler gear rotatably mounted thereto, the first and second idler gears remaining intermeshed with each other and the plate cylinder and blanket cylinder respectively, regardless of the relative positions of the plate and blanket cylinders.
17. The cylinder drive system as defined in claim 16, wherein the first linkage arm is pivotable about a plate cylinder rotation axis and the second linkage arm is pivotable about a blanket cylinder rotation axis, the first and second linkage arms being relatively pivotable about a pivot axis coaxial with a rotation axis of one of the first and second idler gears.
18. The cylinder drive system as defined in claim 14, wherein the gear drive linkage mechanism comprises a lateral retaining mechanism which prevents excessive lateral movement thereof.